

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Starkey Laboratories, Inc.
Request for Waiver of
Section 15.247(a)(2) of the
Commission's Rules

ET Docket number 09-38

To: Geraldine Matise
Chief policy and Rules Division
Federal Communications Commission
445 12th Street, S.W.,
Washington, D.C. 20554.

From: Jeffrey Solum
Starkey Laboratories
6600 Washington Ave. So.
Eden Prairie, MN 55344

Date: August 26th, 2011

Geraldine,

Pursuant to Section 1.1206 of the Commission's rules this ex parte notice is being filed by Starkey Laboratories Inc.

Starkey laboratories Inc. received the following E-mail from the office of the OET pertaining to it's waiver request ET Docket No. 09-38. In the Email included herein, the office of the OET requests further information. Specifically the questions from the OET are listed below with Starkey's responses shown in italics.

Mr. Solum:

We have reviewed the Amended Request for Waiver that you filed on behalf of Starkey Laboratories Inc. (Starkey Labs) on July 22, 2011, subsequent to meeting with OET staff on July 18, 2011. We ask that you provide additional information in support of this request, as discussed below.

In the Amended Request you ask that we waive the minimum 500 kilohertz 6 dB bandwidth requirement in Section 15.247(a)(2) of the Commission's rules, and permit Starkey Labs to market low power RF devices under this rule using a minimum 6 dB bandwidth of 100 kHz, while maintaining the 8dBm/3kHz power spectral density allowed by that rule. The Amended Waiver states that Starkey Labs would like the waiver to apply for the following types of devices: "(1) devices for remote control and configuration of hearing instruments such as SURF Link programmer and SURF Link Remote control, and (2) devices for streaming digital audio to and from a hearing instrument such as SURF Link Media device and SURF Link cellphone device."

The Amended Waiver provides little description (either operational or technical) of these SURF Link devices that Starkey Labs would like to have authorized under the requested waiver. We have discovered that the FCC already has recently authorized five Starkey Labs' devices under the current Part 15 rules, four of which are SURF Link devices that operate in the 902-928 MHz band and are presently being marketed by Starkey Labs according to its website. Based on information contained in our equipment authorization database, the SURF Link devices already approved for the 902-928 MHz band, listed below, appear to provide the same capabilities as the devices for which Starkey Labs has requested a waiver.

Device	Use	Frequency Band	FCC Rule Part Authorized Under
nEARcom Model TM1	Wireless hearing aid programmer adaptor	1.705-10 GHz	Section 15.223
SurfLink Media Controls	Transmit audio from various media sources (TV, radio, MP3 player) to hearing aid	902-928 MHz	Section 15.247
WiSeries RIC (Receiver-in-Canal)	Wireless communications between hearing aids	902-928 MHz	Section 15.249
SurfLink Programmer	Wireless hearing aid programmer (interface between computer and hearing aid)	902-928 MHz	Section 15.249
SurfLink Remote Control	Wirelessly control hearing aid settings (on/off; volume)	902-928 MHz	Section 15.249

Because the FCC already has approved SURF Link devices in compliance with the current bandwidth and emission requirements in Sections 15.247 and 15.249 and these products are already being introduced into the market, we believe that Starkey Labs needs to explain why it needs a waiver of the minimum bandwidth requirement in Section 15.247 for these devices. For example, what performance objective is Starkey trying to achieve for each of these devices that cannot be met by complying with the current rules?

Starkey is attempting to increase the range and enhance the performance of several devices. The SURFLink Remote Control device would greatly benefit by using a higher power to extend it's range and improve it's reliability by changing it's designation to a 15.247 compliant device from a 15.249 device.

Does compliance with current rules impair the devices' performance and if so, how?

Starkey's SURFLink Media Device currently uses two overlapping FSK modulated carriers to comply with the bandwidth requirements for operation at 15.247. Starkey is interested in separating the FSK signals to avoid inter-symbol interference and to enhance performance in a noisy environment where 500 KHz contiguous bandwidth is unavailable. Further it employs two radios to send the two modulated carriers adding to the cost, complexity, and power consumption of the system. Starkey is interested in time multiplexing the left and right channels using a single carrier which would have an occupied bandwidth less than 500 KHz.

Starkey employs a Listen Before Talk mechanism to avoid interfering with other users of the spectrum. Pairing two channels in the current overlapping channel scheme employed in the SURFLink Media Device and possible future designs limit our ability to minimize interference to others and from others. The waiver would allow us to split the two channels and to use our Listen Before Talk mechanism to find channels with the lowest interference profile.

What alternatives have been considered for achieving the desired performance objective and why aren't these alternatives sufficient?

Starkey has been pursuing alternatives such as modulating two adjacent carriers. These modulated carriers are non-orthogonal and therefore interfere with one another. This interference limits the performance of the system.

Three of the currently authorized devices are authorized under Section 15.249 which has no minimum bandwidth requirement, so why does Starkey Labs want to authorize these particular types of devices under Section 15.247 which would require a waiver of that rules' minimum bandwidth requirement?

Starkey is interested in extending the range and improving the reliability of these devices by increasing the output power. Starkey has other new designs currently set for release later this year that could greatly enhance the hearing impaired users experience if the waiver is granted by extending their useful range of operation and improve their reliability. For example Starkey is building a Cellphone interface device which will allow users to carry on a phone conversation using their hearing aids as wireless headsets, however this use case requires the higher power allowed by this waiver.

As we discussed with you previously, the Commission typically issues a waiver of the Part 15 rules for a specific device that describes the performance requirements that the device has to meet to be certified. To consider a waiver request, the Commission must know the specific device for which a waiver is being requested; have a thorough description of the device and how it will function; and know the specific technical characteristics of the device. The Amended Waiver provides a reference to already approved SURF Link devices but not the type of information we need for each device that would be covered by a waiver, including the following operational and technical descriptions:

- Operational description:
 - Device model name and/or number *SURFLINK media device, SURFLINK Remote control, SURFLINK programmer, and SURFLINK cell-phone device.*
 - Device description and function *SURFLINK media device allows users to interact with entertainment devices such as a television or other multi-media device. This device will also be available as an assisted listening device (ALD) via a microphone input.*
 - *SURFLINK remote control device allows user to control the functions within a hearing aid from a small device worn in the users pocket or concealed on the persons body or from a handbag.*
 - *SURFLINK programmer device allows configuration of hearing instruments by a hearing professional within the professionals office. Extending the operating range of this device would add comfort and convenience for the patient and professional in a hearing aid fitting session and would allow fitting inside of a sound proof fitting room.*
 - How would the sale/use of the device be limited to persons with hearing disabilities? *Starkey does not offer for sale any of it's products over the counter. Starkey sells all of it's products through licensed hearing professionals.*
- Technical description:
 - Band of operation (e.g., 902-928 MHz) *902 to 928 MHz.*
 - Specific 6 dB bandwidth *< 225 KHz*
 - Conducted PSD (i.e., PSD delivered to the leads of antenna) *< 8 dBm/3 KHz*
 - Total conducted power (total power delivered to the leads of antenna) *< +20 dBm*
 - Antenna gain *< 4 dBi*
 - Total radiated power (either EIRP or ERP) *< 26 dBm*
 - Modulation technique (e.g., frequency hopping spread spectrum; direct sequence spread spectrum; other digital modulation) *2-FSK, MSK, GMSK*

Please let me know if you have additional questions as we continue to work through this process with you. I look forward to your response to our request for additional information in support of Starkey Labs' waiver request.

Geraldine Matise
Chief, Policy and Rules Division, OE

Respectfully Submitted,

Jeffrey P. Solum
Wireless System Architect
Starkey Laboratories Inc.